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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,694	09/16/2003	Preston Whitcomb	05689-017001	4702

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MINNEAPOLIS, MN 55440-1022

EXAMINER
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ADAMS, GREGORY W

ART UNIT	PAPER NUMBER
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3652

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/27/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/664,694

Applicant(s)

WHITCOMB, PRESTON

Examiner

Gregory W. Adams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/26/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 and 20-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-2, 7-10, 12, 14, 21-25, 27-35, 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Fossey et al. (US 5,988,971).

With respect to claims 1, 7, 12, 14, 29, 30, 32, Fossey et al. disclose a system for handling substrates held in a carrier comprising an articulated robotic arm 23, processor 16, 19, blade 21 defining a critical plane, active area 62-64, mapping sensor 61 and a first end passive gripper 31 and a second end active gripper 32 comprising a servo gripper 66, 67 coupled to an electric motor 69. With respect to claim 7, the claimed steps relate to a method of making the making an active rather than the apparatus. Examiner advises applicant that mixing statutory classes of invention may lead to indefiniteness during claim interpretation, thus Examiner seeks clarification on the type of claim Applicant has created. See MPEP 2173.05(p). Further, the method steps in claim 7 resemble product-by-process limitations and have been treated as such. That is, the limitations relating to how a metalization process forms an active area would not be expected to impart distinctive characteristics to an apparatus and, moreover, when there is a substantially similar product, as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct. See In re

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Marosi, 218 USPQ 289, 292 (Fed. Cir. 1983); MPEP 716.01 (establishing that a statement or argument by the attorney is not factual evidence). Thus, claim 7 can be regarded as anticipated by the applied prior art, and the burden of proof is shifted to Applicant, not the Examiner, to show that the process of making renders the claims patentably distinct. See *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

With respect to claims 2, 31, 37 Fossey et al. disclose detecting a mean vertical location.

With respect to claims 8, 33, Fossey et al. disclose an active area configured to measure mean vertical location.

With respect to claims 9-10, 34-35, Fossey et al. disclose a measurement transducer and capacitance probe.

With respect to claims 21-23, Fossey et al. disclose a method for handling substrates held in a carrier comprising:

moving an end effector 21 defining a critical plane across an edge of the substrates;

measuring coordinate information, i.e. vertical location, of the substrates in a carrier with a mapping sensor 21;

storing coordinate information, e.g. processor 16, 19 (C7/L55-C8/L15);

sequentially indexing a robotic arm according to stored information;

measuring a distance between a substrate and critical plane (C6/L20-C7/L30);

and

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engaging a substrate with a robot arm 23.

With respect to claim 24, referring to location data "to within 135 microns" it is well known within the art of substrate handling that high tolerances are preferred.

With respect to claim 25, referring to substrate location "to within 100 microns" it is well known within the art of substrate handling that high tolerances are preferred.

With respect to claim 27, Fossey et al. disclose a blade 21 and an active area 62-64. With respect to claims 27 and 28, Applicant is respectfully reminded that to be entitled to patentable weight in method claims the structural limitations recited therein must affect the method in a manipulative sense, and not to amount to the mere claiming of a use of a particular structure. See *Ex parte Pfeiffer*, 135 USPQ 31 (1961). In this case the structural limitations of a blade having a first end and a second end and active area do not impact the method as required, thus amounting to the mere claiming of a use of a particular structure. For example, claim 27 should be rewritten as --...providing a robotic arm including an end effector comprising a blade having a first end and a second end, the blade having an active area--.

With respect to claim 28, Fossey et al. disclose a passive gripper and an active gripper.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3-4 & 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossey et al. (US 5,988,971) in view of Shamlou et al. (US 6,024,393).

With respect to claims 3-4 & 39-40, Fossey does not disclose a silicon wafer blade or a ceramic blade. Shamlou et al. '393 disclose a silicon wafer blade 100 (C9/L32-34) and ceramic blade. Shamlou discloses that silicon wafer blades aren't prone to voids are low-friction surfaces (C9/L25-40) and that ceramic blades provide structural strength under the high-head operating conditions of the wafer processing reactors despite thin cross-sections (C2/L42-45). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the blade of Fossey et al. to include a silicon wafer or ceramic, as per the teachings of Shamlou et al., to reduce voids and friction or provide structural strength in high heat.

3. Claims 5-6 & 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossey et al. (US 5,988,971)

With respect to claims 5-6 & 41-42, Fossey an end effector blade 21 except for limiting the thickness to less than 750 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to limit the blade thickness to less than 750 microns, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

4. Claims 11, 13, 15-16 & 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossey et al. (US 5,988,971) in view of Govzman et al. (US 6,454,332).

With respect to claims 11 & 36, Fossey et al. does not disclose an optical sensor. Govzman et al. disclose a pneumatic sensor to decrease particle generation and decrease misalignment. C1/L10-20. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the active are of Fossey et al. to include a pneumatic sensor, as per the teachings of Govzman et al., to decrease particle generation and increase alignment accuracy.

With respect to claims 13, 15-16, Fossey et al. does not disclose a pneumatic active gripper or providing feedback to a processor for determining positive gripper engagement. Govzman et al. disclose positive gripper engagement sensor, e.g. pressure transducer via a vacuum to sense gripper position and engagement to increase yield and decrease vibrations. C1/L10-25; C3/L5-55. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Fossey et al. to include a pneumatic active gripper and feedback, as per the teachings of Govzman et al., to increase alignment prior to placement in a vacuum chamber for purposes of increasing yield and reduce particle causing vibrations.

5. Claims 17-18, 20 & 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossey et al. (US 5,988,971) in view of Cheng (US 6,164,894).

With respect to claims 17 & 26, Fossey et al. does not disclose a substrate prealigner. Cheng '894 discloses a prealigner for use in a system for handling substrates held in a carrier including a substrate prealigner 16 having a prealigner chuck 86. Cheng '894 discloses a prealigner and prealigner chuck to locate the center

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of a wafer within a fast, precise automated wafer handling system to increase wafer yields. C1/L14-36. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to prealign a substrate within the systems of Fossey et al., as taught by Cheng, to locate the center of a wafer within a fast, precise automated wafer handling system to increase wafer yields.

With respect to claim 18, Fossey et al. does not disclose a prealigner chuck having embattlements. Cheng '894 discloses a prealigner chuck 84 having embattlements 84, 88. Cheng '894 discloses a prealigner chuck and embattlements to support a substrate within a fast, precise automated wafer handling system to increase wafer yields. C1/L14-36. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to prealign a substrate within the systems of Fossey et al., as taught by Cheng, to locate the center of a wafer within a fast, precise automated wafer handling system to increase wafer yields.

With respect to claim 20, Fossey et al. does not disclose a prealigner chuck with holes. Cheng '894 discloses a prealigner chuck 84 having plurality of holes (C7/L32-34) to retain a substrate to a chuck 86. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to had a prealigner chuck with holes to a system of Fossey et al., as taught by Cheng, to retain a substrate to a chuck.

6. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fossey et al. (US 5,988,971) in view of Hsiao (US 6,040,585). Fossey et al. do not disclose a laser transducer. Hsiao '585 discloses a laser transducer 52 to sense blade/substrate



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orientation which simplifies wafer handling and reduces moving parts which consequently reduces particle generation. C1/L11-30; C5/L24-25. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize laser sensors for the end effector of Fossey et al., as taught by Hsiao, to simplify a system that handles substrates and reduce particle generation.

### ***Response to Arguments***

Applicant's arguments filed December 26, 2006 have been fully considered but they are not persuasive.

With respect to a mapping sensor "configured to measure position and orientation", Applicant is respectfully reminded that claim language consisting of functional language and/or intended use phrasing is given little, if any, patentable weight as the apparatus must merely be capable of functioning, or being used, as claimed. See MPEP 2112.02, 2114. Here, Fossey's mapping sensor 61 measures position inasmuch as it scans each slot location, sensing the presence or absence of the wafer's upper edge at each slot to determine a "y-axis" position (C7/L64-C8/L4) and an orientation, e.g. vertical, wherein a present wafer is inherently vertical orientation. Fossey also discloses sensors that measure distance by sensing a tilt (C8/L15-20), e.g. an end effector second end is closer than an end effector first end, and correcting before picking up said wafer.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

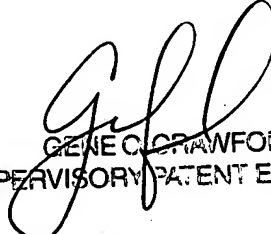
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory W. Adams whose telephone number is (571) 272-8101. The examiner can normally be reached on M-Th., 8:00-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Crawford can be reached on (571) 272-6911. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GWA

  
GENE C. CRAWFORD  
SUPERVISORY PATENT EXAMINER